Claims:

1. A method of enhancing the signal-to-noise ratio of a microphone array, the array including a plurality of microphones and having a directivity pattern, the directivity pattern of the array being adjustable based on one or more parameters, the method comprising the steps of:

a. evaluating one or more parameters to realize an angular orientation of a directivity pattern null, which angular orientation reduces microphone array output signal level, said evaluation performed under a constraint that the null be located within a predetermined region of space;

b. modifying output signals of one or more microphones of the array based on the one or more evaluated parameters; and

c. forming an array output signal based on one or more modified output signals and zero or more unmodified microphone output signals.

2. The method of claim 1 wherein steps a, b, and c, are performed a plurality of times to obtain an adaptive array response.

3. The method of claim 1 wherein the predetermined region of space includes sources of undesired acoustic energy.

4. The method of claim 1 wherein undesired acoustic energy impinges on the array from a direction within the predetermined region of space.

5. The method of claim 1 wherein the array has a plurality of directivity patterns corresponding to a plurality of frequency subbands, one or more of the plurality of directivity patterns including a null.

6. The method of claim 5 further comprising the step of forming a plurality of subband microphone output signals based on an output signal of a microphone of the array, wherein the step of modifying output signals comprises modifying the subband microphone output signals based on the one or more evaluated parameters.

7. The method of claim 1 wherein the array comprises a plurality of cardioid sensors.

8. The method of claim 7 wherein the plurality of cardioid sensors comprises a foreground cardioid sensor and a background cardioid sensor and wherein the step of evaluating comprises determining a parameter reflecting a ratio of (i) a product of output signals of the foreground and background cardioid sensors to (ii) the square of the output signal of the background cardioid sensor.

9. The method of claim 7 wherein the plurality of cardioid sensors comprises a foreground cardioid sensor and a background cardioid sensor and wherein the step of evaluating comprises determining a scale factor for an output signal of the background cardioid sensor.

10. The method of claim 9 wherein the scale factor is determined based on an output signal of the background cardioid sensor and the array output signal.

11. An apparatus for enhancing the signal-to-noise ratio of a microphone array, the array including a plurality of microphones and having a directivity pattern, the directivity pattern of the array being adjustable based on one or more parameters, the apparatus comprising:

a. means for evaluating one or more parameters to realize an angular orientation of a directivity pattern null, which angular orientation reduces microphone array output signal level, said evaluation performed under a constraint that the null be located within a predetermined region of space;

b. means for modifying output signals of one or more microphones of the array based on the one or more evaluated parameters; and

c. means for forming an array output signal based on one or more modified output signals and zero or more unmodified microphone output signals.

12. The apparatus of claim 11 wherein the predetermined region of space includes sources of undesired acoustic energy.

13. The apparatus of claim 11 wherein undesired acoustic energy impinges on the array from a direction within the predetermined region of space.

14. The apparatus of claim 11 wherein the array has a plurality of directivity patterns corresponding to a plurality of frequency subbands, one or more of the plurality of directivity patterns including a null.

15. The apparatus of claim 14 further comprising means for forming a plurality of subband microphone output signals based on an output signal of a microphone of the array, wherein the means for modifying output signals comprises means for modifying the subband microphone output signals based on the one or more evaluated parameters.

16. The apparatus of claim 14 wherein the means for evaluating comprises a polyphase filterbank.

17. The apparatus of claim 11 wherein the means for modifying comprises a means for performing fast convolution.

18. The apparatus of claim 11 wherein the array comprises a plurality of cardioid sensors.

19. The apparatus of claim 18 wherein the plurality of cardioid sensors comprises a foreground cardioid sensor and a background cardioid sensor and wherein the means for evaluating comprises means for determining a parameter reflecting a ratio of a (i) product of output signals of the foreground and background cardioid sensors to (ii) the square of the output signal of the background cardioid sensor.

20. The apparatus of claim 18 wherein the plurality of cardioid sensors comprises a foreground cardioid sensor and a background cardioid sensor and wherein the means for evaluating comprises means for determining a scale factor for an output signal of the background cardioid sensor.

21. The apparatus of claim 18 wherein the scale factor is determined based on an output signal of the background cardioid sensor and the array output signal.

22. The apparatus of claim 11 wherein the array comprises a cardioid sensor and a dipole sensor.

23. The apparatus of claim 11 wherein the array comprises a omnidirectional sensor and a dipole sensor.